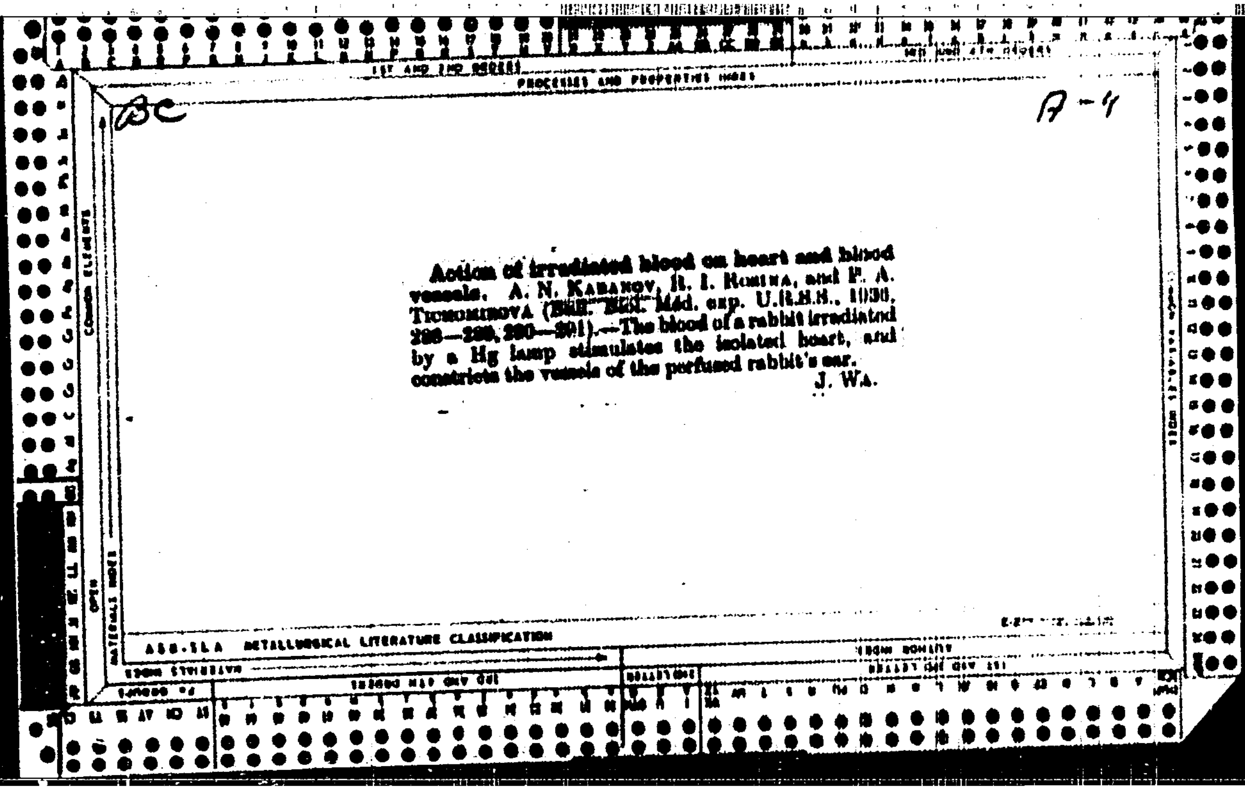
SLAVINSKIY, D.M.; KABANOV, A.F.

Separation of ethylbenzene from xylene isomers by continuous "extrasharp" rectification and low temperature crystallization. Khim. prom. no.10:735-741 O '63. (MIRA 17:6)



BC

A-4

PROCESSES AND PROPERTIES INDEX

Action of irradiated blood on heart and blood vessels. A. N. Kabanov, R. I. Romina, and F. A. Tikhomirova (Bull. Biol. Méd. exp. U.R.S.S., 1936, 288—289, 290—291).—The blood of a rabbit irradiated by a Hg lamp stimulates the isolated heart, and constricts the vessels of the perfused rabbit's ear.

J. Wa.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION [illegible], [illegible]

Medicine

Stories about the human body, Moskva, Ministerstvo zdravookhraneniia SSSR, In-t sanitarnogo prosveshcheniia, Vol. 1, 1946.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

KABANOV, Aleksandr Nikolaevich, 1894-

Textbook of human anatomy and physiology for secondary schools. Izd. 2. Moskva Uchpedgiz. 1950. 246 p.

USSR/Biology - Digestion Jul 52

"Physiology of Digestion," Prof A. N. Kabanov, Dr Med Sci

"Nauka i Zhizn'" Vol 19, No 7, pp 25-28

Gives a fairly complete account of work on the physiology of digestion done by I. P. Pavlov and his school up to now. Emphasizes data indicating the effect of the nervous system on digestive processes.

244T5

KABANOV, A. N.

4893. Uchebnik anatomii i fiziologii cheloveka. Dyla 8-go klassa sred. Shkoly. Per. s 5-go IZD. Nukussamarkand, karakalpakgiz, 1954. 263 s. s Ill., 4L. Ill. 23sm. 3.000 EKZ. 4r. 40k. V per.--Na karakalpak. yaz. -(54-57804) 611-612(075)

SO: Knizhnaya Letopis', Vol. 1, 1955

KABANOV, A.N.

Excitation as a parabiotic process. Trudy Vses.ob-va fiziol.biokhim. i farm. 2:55-57 '54. (MIRA 8:7)

1. Institut fizicheskogo vospitaniya i shkol'noy gigiyeny Akademii pedagogicheskikh nauk RSFSR.
(NERVOUS SYSTEM, physiology,
parabiotic mechanism of irritation)

KABANOV, A.N., prof.; FARFEL', V.S., prof., red.; PONOMAREVA, A.A., tekhn. red.

[Programs of pedagogical institutes; human and animal physiology for natural science faculties] Programmy pedagogicheskikh institutov; fiziologiia cheloveka i zhivotnykh dlia fakul'tetov estestvoznaniia. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1955. 29 p. (MIRA 11:9)

1. Russia (1917- R.S.F.S.R.) Glavnoye upravleniye vysshikh i srednikh pedagogicheskikh uchebnykh zavedeniy.
(PHYSIOLOGY--STUDY AND TEACHING)

KABANOV, Aleksandr Nikolayevich, professor; MARKOV, N.G., redaktor; MARKHOVA, N.N., tekhnicheskiy redaktor

[Textbook of human anatomy and physiology] Uchebnik anatomii i fiziologii cheloveka; dlia 8-go klassa srednei shkoly. Izd. 7-oe. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1955. 240 p. (MLRA 8:6)
(Anatomy, Human) (Physiology)

KABANOV, A.N., professor.

The support of our body. Zdorov'e 1 no.4:10-12 Ap '55.(MIRA 9:3)
(BONES)

KABANOV, A.N., professor; LEONT'YEVA, N.N., kandidat meditsinskikh nauk.

Appetite. Zdorov'e 1 no.10:4-6 O.'55. (MIRA 9:5)

(APPETITE)

KABANOV, ALEKSANDR NIKOLAYEVICH

L/5
633.51
.K1

OCHERK FIZIOLOGII VYSSHEY NERVNOY DEYATEL'NOSTI (ESSAY ON THE PHYSIOLOGY OF THE CENTRAL NERVOUS SYSTEM) MOSKVA, IZD-VO AKAD. PEDAGOGICHESKIKH NAUK RSFSR, 1956.

146 P. ILLUS., DIAGRS., PORTS., TABLES.

AT HEAD OF TITLE: AKADEMIYA PEDAGOGICHESKIKH NAUK RSFSR. INSTITUT FIZICHESKOGO VOSPITANIYA I SHKOL'NOY

KABANOV, A.N., professor; RED'KINA, Ye.K., kandidat biologicheskih nauk

Our body temperature. Zdorov'e 2 no.9:4-6 S '56. (MLRA 9:10)
(BODY TEMPERATURE)

KABANOV, A.N.; ZOLOTAYKO, G.A.

[redacted]

Changes in the functional state of the motor apparatus caused by excitation of the cerebellum. Trudy Vses. ob-va fiziol., biokhim. i farm. 3:53-57 '56 (MLRA 10:4)

1. Kafedra fiziologii Moskovskogo pedagogicheskogo instituta im. Potemkina; zaveduyushchiy kafedroy A.N. Kabanov. Moskva.
(CEREBELLUM) (MUSCULAR SENSE)

KABANOV, Aleksandr Nikolayevich; MARKOV, N.G., redaktor; MAKHOVA, N.N.,
tekhnicheskiy redaktor

[Physiology of man and animals; nervous system and motor apparatus. Textbook for departments of natural history in pedagogical institutes] Fiziologiia cheloveka i zhivotnykh; nervnaia sistema i dvigatel'nyi apparat. Uchebnik dlia fakul'tetov estestvoznaniia pedagogicheskikh institutov. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1957. 351 p. (MIRA 10:9)
(PHYSIOLOGY, COMPARATIVE)

KABANOV, A.N., professor

Digestion. Zdorov'e 3 no.1:3-5 Ja '57. (MIRA 10:2)
(DIGESTION)

EXCERPTA MEDICA Sec.14 Vol.12/1 Radiology Jan 5

KABANOV, A.N.

65. PNEUMOMEDIASTINOGRAPHY IN DIAGNOSIS OF CANCER OF THE OESOPHAGUS (Russian text). Kabanov A. N. KHIRURGIJA 1957/4 (92-98)
Tables 1 Illus. 5

For the diagnosis of diseases of the anterior and posterior mediastinum, particularly of cancer of the oesophagus, the method of artificial pneumomediastinography is used in the USSR by Professor V.I. Kasansky since 1954. Oxygen is used for insufflation of the mediastinum. The mediastinum is anaesthetized by a 60% solution of novocaine with the aid of a needle curved to an angle of 30°. The needle is introduced into the anterior mediastinum retrosternally through the incisura jugularis. 500-900 ml. of oxygen is injected. The patient is lying prone and in 1-2 hr. a series of tomopneumomediastinograms are taken with contrast medium and without it. The study of functional, physical and physiological evidence before, during and after insufflation show that the patients tolerate it well. During insufflation slight deviations from the normal are sometimes observed, but they gradually disappear without causing any harm. In 150 insufflations there were no cases with serious complications. This method was used by the author in 84 cases for X-ray diagnosis. Valuable data were obtained which could not be revealed by ordinary X-ray examination. The external walls of the oesophagus were seen, the borders of the tumour and the presence of metastasis (in 13 patients) and infiltration (in 8 patients) into the mediastinum. This evidence was later supported during operation and by cytological and histological findings. (IX, 5, 14, 16)

Surgery Clinic, Cent Inst Advanced Training of Physicians

USSR / Human and Animal Physiology (Normal and Pathological). T
Neuromuscular Physiology.

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 60685

Author : Kabanov, A. N.; Leont'yeva, N. N.
Inst : Not given
Title : Excitation Wave Analysis as a Parabiotic Process

Orig Pub : Byul. eksperim. biol. i meditsiny, 1957, 44, No 7, 26-30 JL.

Abstract : In an acute tests on cats, the musculus tibialis anterior was stimulated by indirect paths of straight-angle impulses of different frequencies and duration. The frequency threshold was determined with the duration of impulses 0.5, 1.4 and 8 m. per sec. With short impulses the maximal contraction was preserved with a relatively large frequency, but the longer the impulses, the lesser frequency produced a fall in the magnitude of contraction. Analogous results were obtained in recording the movement

Card 1/2

USSR / Human and Animal Physiology (Normal and Pathological). T
Neuromuscular Physiology.

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 60685

of the human thumb in response to the stimulation of the distal moving point of the median nerve with the impulse duration of 1 - 8 m./sec. According to the increase in the duration of the stimulating impulses, the return of the organ to its initial state was delayed, i.e., the rate in the reversibility of the parabiotic process was decreased. In man, the rate of the parabiotic process reversibility is considerably higher than that in experiments with cats, which is in agreement with the larger magnitude of lability of the human muscle.

Card 2/2

KAZANSKIY, V.I., prof. KABANOV, A.N.

Timely and exact diagnosis is the most important aspect of surgery of the cardia and esophagus [with summary in English]. Khirurgiia 34 no.5:3-10 My '58 (MIRA 11:7)

1. Iz 4-y kafedry khirurgii (zav. prof. V.I. Kazanskiy) TSentral'nogo instituta usovershenstvovaniya vrachey (dir. V.P. Lebedeva) na baze TSentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya.
(ESOPHAGUS, neoplasms
diag. & differ. diag. from other dis., methods (Rus)
(STOMACH NEOPLASMS, diagnosis
cardia neoplasms, methods (Rus))

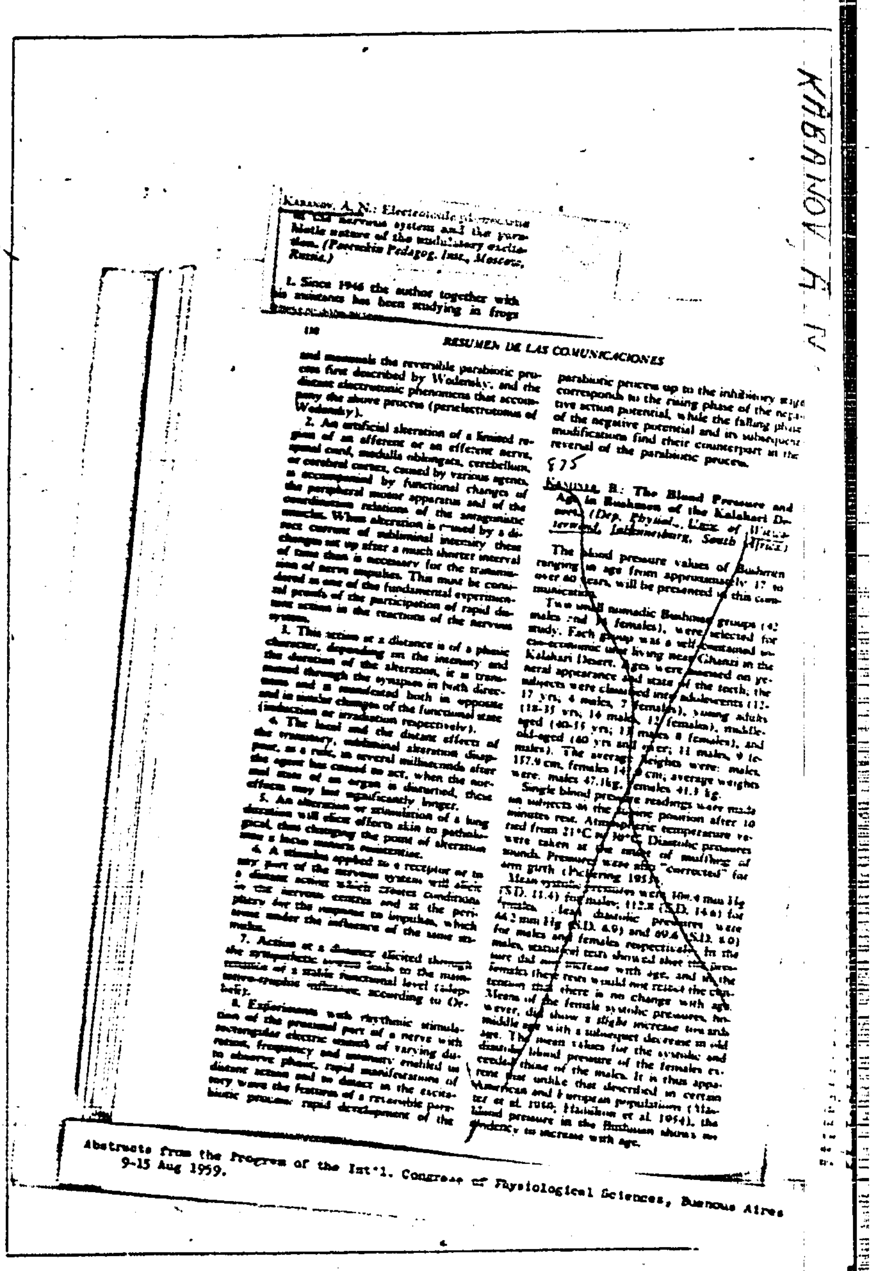
ANOKHIN, P.K., BABSKIY, Ye.B., VERESHCHAGIN, N.K., KABANOV, A.N., PUCHKOV, N.V.
DOLIN, A.O.

Nikolai Vladimirovich Timofeev; an obituary. Fiziol.zhur. 44
no.9:904-905 S '58 (MIRA 11:12)
(TIMOFEEV, NIKOLAI VLADIMIROVICH, 1896-1958)

KABANOV, A.N., Cand Med Sci -- (diss) "~~The~~ Clinic and modern methods of the diagnosis of esophageal cancer." Mos, 1959. 14 pp (Min of Health USSR. Central Inst for the Advanced Training of Physicians). 200 copies (KL,37-59, 111)

7/

KABANOV, A. N.



KABANOV, A. N.: Electrotonic phenomena in the nervous system and the parabiotic nature of the undulatory excitation. (Potemkin Pedagog. Inst., Moscow, Russia.)

1. Since 1946 the author together with his assistants has been studying in frogs [illegible]

and mammals the reversible parabiotic process first described by Wedensky, and the distant electrotonic phenomena that accompany the above process (parelectrotonus of Wedensky).

2. An artificial alteration of a limited region of an afferent or an efferent nerve, spinal cord, medulla oblongata, cerebellum, or cerebral cortex, caused by various agents, is accompanied by functional changes of the peripheral motor apparatus and of the coordination relations of the antagonistic muscles. When alteration is caused by a direct current of subliminal intensity these changes set up after a much shorter interval of time than is necessary for the transmission of nerve impulses. This must be considered as one of the fundamental experimental proofs of the participation of rapid distant actions in the reactions of the nervous system.

3. This action at a distance is of a phasic character, depending on the intensity and the duration of the alteration, it is transmitted through the synapses in both directions and is manifested both in opposite and in similar changes of the functional state (induction or irradiation respectively).

4. The local and the distant effects of the transitory, subliminal alteration disappear, as a rule, in several milliseconds after the agent has ceased to act; when the normal state of an organ is disturbed, these effects may last significantly longer.

5. An alteration or stimulation of a long duration will elicit effects akin to pathological, thus changing the point of alteration into a locus minoris resistentiae.

6. A stimulus applied to a receptor or to any part of the nervous system will elicit a distant action which creates conditions in the nervous centres and at the periphery for the response to impulses, which occur under the influence of the same stimulus.

7. Action at a distance elicited through the sympathetic system leads to the maintenance of a stable functional level (adaptation-trophic influence, according to Orbeli).

8. Experiments with rhythmic stimulation of the proximal part of a nerve with rectangular electric stimuli of varying duration, frequency and intensity enabled us to observe phasic, rapid manifestations of distant action and to detect in the excitatory wave the features of a reversible parabiotic process: rapid development of the parabiotic process up to the inhibitory stage corresponds to the rising phase of the negative action potential, while the falling phase of the negative potential and its subsequent modifications find their counterpart in the reversal of the parabiotic process.

575

KAMINER, B.: The Blood Pressure and Age in Bushmen of the Kalahari Desert. (Dep. Physiol., Univ. of Witwatersrand, Johannesburg, South Africa.)

The blood pressure values of Bushmen ranging in age from approximately 17 to over 60 years, will be presented in this communication.

Two small nomadic Bushmen groups (42 males and [illegible] females), were selected for study. Each group was a self-contained socio-economic unit living near Ghanzi in the Kalahari Desert. Ages were assessed on general appearance and state of the teeth; the subjects were classified into adolescents (12-17 yrs, 4 males, 7 females), young adults (18-35 yrs, 14 males, 17 females), middle-aged (40-55 yrs; 13 males 8 females), and old-aged (60 yrs and over; 11 males, 9 females). The average heights were: males 157.9 cm, females 14[illegible] cm; average weights were: males 47.1kg, females 41.3 kg.

Single blood pressure readings were made on subjects in the supine position after 10 minutes rest. Atmospheric temperature varied from 21°C to 30°C. Diastolic pressures were taken at the onset of muffling of sounds. Pressures were also "corrected" for arm girth (Pickering 1955).

Mean systolic pressures were 106.4 mm Hg (S.D. 11.4) for males; 112.8 (S.D. 14.6) for females. Mean diastolic pressures were 64.2 mm Hg (S.D. 6.9) and 69.4 (S.D. 8.0) for males and females respectively. In the males, statistical tests showed that the pressure did not increase with age, and in the females these tests would not reject the contention that there is no change with age. Means of the female systolic pressures, however, did show a slight increase towards middle age with a subsequent decrease in old age. The mean values for the systolic and diastolic blood pressure of the females exceeded those of the males. It is thus apparent that unlike that described in certain American and European populations (Master et al. 1950, Hamilton et al. 1954), the blood pressure in the Bushmen shows no tendency to increase with age.

Abstracts from the Program of the Int'l. Congress of Physiological Sciences, Buenous Aires
9-15 Aug 1959.

KABANOV, Aleksandr Nikolayevich. Prinimali uchastiye: FARFEL', V.S.; KABANOVA, Ye.A.; LEONT'YEVA, N.N.; PANKOVA, L.N.; RED'KINA, Ye.K.. MARKOV, N.G., red.; MAKHOVA, N.N., tekhn.red.

[Physiology of man and animals; internal organs, metabolism, and skin; handbook for natural science departments of pedagogical institutes] Fiziologiia cheloveka i zhivotnykh; vnutrennie organy, obmen veshchestv i kozha. Uchebnik dlia fakul'tetov estestvoznaniia pedagogicheskikh institutov. Moskva, Gos.uchebno-pedagog.izd-vo M-va prosv.RSFSR, 1959. 358 p. (MIRA 12:10)

(PHYSIOLOGY, COMPARATIVE)

KABANOV, A.N.

Combination of intravenous anesthesia and muscle relaxants in esophagoscopy. Akt. vop. obezbol. no.2:105-119 '59. (MIRA 14:5)

1. Iz 4-y kafedry khirurgii (zaveduyushchiy prof. V.I.Kazanskiy) TSentral'nogo instituta usovershenstvovaniya vrachey i TSentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya (nachal'nik V.N.Zakharchenko).

(INTRAVENOUS ANESTHESIA) (MUSCLE RELAXANTS)
(ESOPHAGUS—EXPLORATION)

KABANOV, A.N. (Novosibirsk, ul.Zhurinskaya, d.70)

Combined pneumomediastinum and pneumoperitoneum in the diagnosis of cancer of the cardia with metastasis to the esophagus. Nov. khir.arkh. no.4:52-59 Jl-Ag '59. (MIRA 12:11)

1. Kafedra khirurgii IV (zav. - prof.V.I.Kazanskiy) TSentral'nogo instituta usovershenstvovaniya vrachey na baze tsentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya.

(PNEUMOMEDIASTINUM)
(PNEUMOPERITONEUM, ARTIFICIAL)
(ALIMENTARY CANAL--CANCER)

KABANOV, A.N.

Esophagoscopy under intravenous anesthesia combined with muscle relaxants. Khirurgiia 35 no.6:46-52 Je '59. (MIRA 12:8)

1. Iz 4-y kafedry khirurgii (zav. - prof.V.I.Kazanskiy TSentral'nogo instituta usovershenstvovaniya vrachey (dir. - M.D.Kovrigina) na baze TSentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya (nach. V.N.Zakharchenko).

(ESOPHAGOSCOPY, anesth. & analgesia
thipental, intravenous, with succinylcholine (Rus))
(THIOPENTAL, anesth. & analgesia
in esophagoscopy, intravenous admin. with succinylcholine (Rus))
(SUCCINYLCHOLINE, ther. use
with thiopental intravenous anesth. in esophagoscopy (Rus))

[illegible], A. [illegible].

"Physiological rules of fatigue development in school children of various ages."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists and Infectionists, 1959.

KABANOV, A.N.; BOGOMAZ, S.P.

Remote parabiotic effects on reflex contractions of skeletal muscles. Nauch.dokl.vys.shkoly: biol.nauki no.4:82-86 '60. (MIRA 13:11)

1. Rekomendovana kafedroy fiziologii cheloveka i zhivotnykh Moskovskogo gorodskogo pedagogicheskogo instituta im. V.P.Potemkina.
(MUSCLES)
(NERVOUS SYSTEM)
(REFLEXES)

KABANOV, A. N.

Cand Med Sci - (diss) "Clinical aspect and modern methods of diagnostics of cancer of the esophagus and heart with spread of the cancer to the esophagus." Novosibirsk, 1961. 17 pp; (Ministry of Public Health RSFSR, Novosibirsk, State Med Inst); 250 copies; price not given; list of author's works on pp 16-17 (10 entries); (KL, 10-61 sup, 224)

KABANOV, Aleksandr Nikolayevich, doktor meditsinskikh nauk;
MARKOSYAN, Akop Artashesovich, doktor biolog, nauk;
FARFEL', Vladimir Solomonovich, doktor biolog. nauk;
BOGORAD, V.B., red.; NEKHLYUDOVA, A.S., red.; SAVCHENKO,
Ye.V., tekhn. red.

[Life and the structure of the human body] Zhizn' i stroenie chelovecheskogo organizma. Moskva, Izd-vo "Znanie," 1961. 34 p. (Narodnyi universitet kul'tury: Estestvennonauchnyi fakul'tet, no.17) (MIRA 15:1)

(BODY, HUMAN)

KABANOV, A.N., prof.

What "put on weight" means. Zdorov'e 8 no.3:4-5 Mr '62.
(MIRA 15:4)

(BODY WEIGHT)

KABANOV, A.N.

Advantages and disadvantages of bronchoesophagoscopy under anesthesia with the use of muscle relaxants. Vest.khir. no.5: 106-110 '61. (MIRA 15:1)

1. Iz kafedry khirurgii (zav. - prof. V.I. Kazanskiy) TSentral'nogo instituta usovershenstvovaniya vrachey (dir. - M.D. Kovrigina), legochno-khirurgicheskikh otdeleniyy Novosibirskogo nauchno-issledovatel'skogo instituta tuberkuleza (dir. - R.K. Loizinger) i Novosibirskogo gorodskogo protivotuberkuleznogo dispansera (gl. vrach - V.N. Kovalenko).

(ESOPHAGUS--EXPLORATION) (BRONCHOSCOPY)
(MUSCLE RELAXANTS) (ANESTHESIA)

KABANOV, A.N.

Combined changes in various indices of the physiological conditions of the nerve. Fiziol.zhur. 48 no.5:527-533 My '62. (MIRA 15:8)

1. Kafedra fiziologii cheloveka i zhivotnykh Gosudarstvennogo pedagogicheskogo instituta imeni V.I.Lenina, Moskva.
(NERVOUS SYSTEM)

KABANOV, A.N.

"On the role of the cerebellum in the organisation of motor activity."

Report submitted, but not presented at the 22nd International
Congress of Physiological Sciences.
Leiden, the Netherlands 10-17 Sep 1962

KABANOV, A.N.

Experimental study of the phenomena of parabiotic long-range action in the nervous system. Uch. zap. MGPI 160:5-18 '62.
(MIRA 17:5)

KABANOV, Aleksandr Nikolayevich. Prinimal uchastiye FARFEL', V.S., prof.; MARKOV, N.G., red.; MAKHOVA, N.N., tekhn.red.

[Physiclogy of man and animals; the nervous system and the motor apparatus] Fiziologiia cheloveka i zhivotnykh; nervnaia sistema i dvigatel'nyi apparat. Uchebnik dlia fakul'tetov estestvoznaniia pedagogicheskikh institutov. Izd.2., ispr. i dop. Moskva, Uchpedgiz, 1963. 327 p. (MIRA 17:2)

KABANOV, A.N., prof.

Stimulation and inhibition. Zdorov'e 9 no.1:9-11 Ja '63.
(MIRA 16:7)

(NERVOUS SYSTEM)

KUSHNIR, Yu.M.; KABANOV, A.N.; LEVKIN, N.P.; CHERNOVA-STOLYAROVA, Ye.Ye.

Electron spectrograph for the EG-100A electron diffraction camera.
Izv. AN SSSR. Ser. fiz. 27 no.9:1196-1198 S '63. (MIRA 16:9)
(Electron diffraction apparatus) (Electrons—Spectra)

KABANOV, A.N.

Functions of the cerebellum. Uch. zap. MOPI 169:175-188 '62.
(MIRA 17:5)

KABANOV, A.N.; KROPP, L.A.; KOROTAYEVA, N.A.

Basic principles of general anesthesia in prolonged intrathoracic operations in tuberculosis of the lungs and pleura. Probl. tub. 41 no.6:24-[illegible]0 '63. (MIRA 17:9)

1. Iz legochnokhirurgicheskogo otdeleniya Novosibirskogo nauchno-issledovatel'skogo instituta tuberkuleza (dir. - kand.med.nauk M.V.Svirezhev).

KABANOV, A.N.; NATRADZE, D.A. (Moskva, Starokonyushennyy pereulok, d.33, kv.25);
CHAPLYGINA, L.R.

Combined occlusion of the pulmonary artery and the main bronchus of the injured lung as a method of a functional study in the surgery of the lungs and the pleura. Grud. khir. 6 no.4:77-82 Jl-Ag '64. (MIRA 18:4)

1. Legochnoye khirurgicheskoye otdeleniye (zav. - doktor med.nauk M.I.Perel'man) i laboratoriya fiziologii (zav. T.S.Vinogradova) Instituta eksperimental'noy biologii i meditsiny (dir. - prof. Ye.N. Meshalkin) Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KABANOV, A.N.

Characteristics of the development of higher nervous activity in children and adolescents. Uch. zap. MGPI no.168:5-21 '62.

Physiological pattern of the development of fatigue in students of various ages. Ibid.:181-190 (MIRA 19:2)

GOLOVINA, L.L.; XABANOV, A.N.

Age-conditioned characteristics of the abstraction of distinctive features of compound stimuli. Uch. zap. MGPI no.160:41-50 '62.
(MIRA 19:2)

KABANOV, A.N.; KOSTRUBINA, Ye.N.

Characteristics of the course of oculocardiac reflex in small children. Uch. zap. MGPI no.168:167-180 '62.
(MIRA 19:2)

KABANOV, A.N.; LEONT'YEVA, N.N.

Effect of the stay in an Alpine camp on the adolescent organism. Uch. zap. MGPI no.168:235-245 '62.

(MIRA 19:2)

A N KABANOV, A D AZAT'YAN, B A GOVOROV, V F RACHENKO, N K MYASNIKOV, L A LAMOVA,
D I AGAFONOVA, YE A SORVIN and A I KABANOV

"Development of Recommendations on the Selection of Types of Electrovacuum Devices in Standard Circuits Used in Radio Engineering Aparatus and on the Procedure for Determination of Optimal and Limiting Allowable Operating Conditions for Some Types of Receiver-Amplifier Tubes in Mass Production Which Have Prospects for These Applications" from Annotations of Works Completed in 1955 at the State Union Sci. Res. Iust; Min. of Radio Engineering Ind.

So: B-3,080,964

KABANOV, A.N.

53-4-7/7

AUTHOR MILUTIN V.I., KABANOV A.N.

TITLE Electrostatic Analyzer of Electron Velocity.
(Elektrostaticheskiy analizator skcrostey elektronov -Russian).

PERIODICAL Uspekhi Fiz.Nauk, 1957, Vol 61, Nr 4, pp 673-698 (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT
If we let electrons enter behind the microscope through a fine diaphragm
into the area of an electrostatic lens which is distant from the optical
axis of the lens, then this lens operates as velocity analyzer because
the diffraction in the lens, as result of its high chromatic error in
this area, is sensitive even to smallest changes of the velocity (G.Moel-
lenstedt, Optik 5, Nr 8/9, 499,1949). The paper under review discusses
different types that have already been constructed, and gives the formulae
for the dispersion and the dissolving power. Dissolving powers up to 50,000
are obtained ($\Delta U = 0.75$ V at $U = 35$ kV). The approximate calculations de-
veloped by A.Septier, CR 239, Nr 5, 399,1954, and W.Lippert, Optik 12, 467,
1955 offer some practical indications for the correct construction of the
lens. In this connection, the attempt is always made to realise the tele-
path of rays, in order to achieve this purpose, Moellenstedt and W.Dietrich
Optik 12, 246, 1955 used a second aperture behind the analyzer lens.The
applications of this device comprise experiments on the discrete energy los-
ses of fast electrons at their transition through different materials, ve-
locity analysis of electrons which are diffracted under large angles (elec-

Card 1/2

KABANOV, A. N.: Master Tech Sci (diss) -- "The development and investigation of an electrostatic analyzer for electron velocities". Moscow, 1958. 13 pp (State Committee of the Council of Ministers USSR on Radio Electronics, Sci Res Inst), (KL, No 15, 1959, 116)

КОПАНЕВ Л. И.

12. СЕКЦИЯ ЭЛЕКТРОННОЙ МИКРОСКОПИИ

Руководитель академик А. А. Лебедев

12 июня
(с 10 до 16 часов)

П. А. Стоянов,
В. В. [illegible]

Электронный микроскоп УЭМВ 100

А. И. Кабанов,
Ю. М. Кушнир

Универсальный электростатический анализатор энергии на 75 кв и некоторые вопросы его применения.

Н. М. Попов

Электронный микроскоп-электронограф с ускоряющим напряжением 400 кв и перспективы использования электронов повышенных скоростей для исследования структуры вещества

Н. Г. [illegible]

О возможности применения электронного микроскопа для исследования объектов в атмосфере газов и во влажном состоянии.

38

12 июня
(с 18 до 22 часов)

З. Я. [illegible]

Использование электронного микроскопа для исследования [illegible] в высокомолекулярных соединений.

Ю. А. Скаков

Электронно-микроскопическое исследование структурной неоднородности в металлах и сплавах.

13. СЕКЦИЯ РАДИОВЕЩАНИЯ, ЭЛЕКТРОАКУСТИКИ И ЗВУКОЗАПИСИ

Руководитель И. Е. Горон

9 июня
(с 10 до 16 часов)

В. А. Шварц

Способы повышения устойчивости работы систем усиления речи.

Г. С. Гинзбург

Исследование распределения во времени мгновенных значений стереофонических сигналов

39

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORiE), Moscow, 8-12 June. 1959

KAFANCV, A. N. and FFTISOV, D. V.

"Method of insulating High-voltage Cables with Rubber Insulation in Armoured Lead-ins and Couplings"

Authors' Certificates
Elktrosvyaz', 1958, No. 2, p. 78 (USSR)

SOV/109-4-1-14/30

AUTHORS: Kabanov, A.N. and Milyutin, V.I.

TITLE: An Electrostatic Lens as a High-resolving-power Analyser of Electron Velocities (Elektrostaticheskaya linza-analizator skorostey elektronov s vysokoy razreshayushchey sposobnost'yu)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 1, pp 109 - 119 (USSR)

ABSTRACT: An analysis of the electron energies by means of an electrostatic lens was first successfully carried out by Möllenstedt (Ref 2) and since then a number of works dealing with this device has been published by various authors (Refs 3,4,5,6 and 7). It appears, however, that the properties of the device have not yet been sufficiently studied. The problem could not easily be tackled analytically and it was therefore decided to undertake an experimental investigation. The principle of a lens analyser is as follows: (Figure 2) a plane narrow electron beam having a velocity U_K, formed by a slot (whose distance from the axis of the lens is y_0) impinges on the lens; this consists of three electrodes and forms a picture of the slot on the screen of the device. The lens is at a

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An Electrostatic Lens as a High-resolving-power Analyser of Electron Velocities

potential U_L . Quantities y_0, U_K, and U_L are so chosen that paths of the electrons are telescopic. Therefore, for a constant U_L, a change ΔU in the electron velocity causes a shift Δy_A in the picture of the slot. The magnitude of the shift caused by the change of the accelerating potential by 1V is known as the dispersion of the analyser and is denoted by δ (mm/V) . The second characteristic of the analyser is its resolving power and this is expressed as $A = U/\Delta U$. The experimental equipment used in the investigations is shown in Figure 3. This employed various components of the electron microscope, type ESM-50 (Ref 9). The electron gun of the equipment (see Figure 3) consisted of a filament 1, a conical beam-forming electrode 2, and an anode 3. The electrons were accelerated between the anode and the cathode to a potential of about 30 kV; subsequently they were directed onto the diaphragm 4 of the object 5 and then onto the lens 6, which produced a

SOV/109-4-1-14/30

An Electrostatic Lens as a High-resolving-power Analyser of Electron Velocities

40-fold magnification of the object on the intermediate screen 7. The slot 8 in the equipment had a variable width (from 0 to 2 mm) and could be moved in two mutually perpendicular directions, so as to adjust its position with respect to the central electrode of the lens-analyser 9. The electrons were deflected by the lens and formed a velocity spectrum which could be observed on the screen 10 and photographed on the film 11. The first problem consisted of determining the optimum operating conditions for the analyser. For this purpose, it was necessary to determine the values of y_o , R and y_A , such that the picture of the slot was as narrow as possible; y_A is the deflection of the electron beam and $R = (U_K - U_L)/U_K$. The results of the investigation are shown in the photographs of Figures 4 and 5 and in the graphs of Figures 6, 7 and 8. The optimum conditions are obtained when $y_o = y_{OK}$ and $R = R_K$. These values of y_o and R are

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SOV/109-4-1-14/30

An Electrostatic Lens as a High-resolving-power Analyser of Electron Velocities

indicated in Figures 6 and 7. The effect of the geometrical dimensions of the lens on the value of the dispersion coefficient δ was also investigated; the results are shown graphically in Figures 9-14 and in Table 1. These curves were taken for various values of the lens thickness T and the slot width d . It was found that the dispersion was of the order of $(1-5).10^{-2}$ mm/V . If the lens had T = 0.4 mm , d = 0.35 mm and distance between the outer electrodes of 7.4 mm, the analyser had a resolving power of 60 000:1 ; this is illustrated by the photometric curves of Figures 12, which were taken for the accelerating potential of 30 kV. Also the effect of the ripple voltage component in the supply potential of the analyser was investigated. The results are illustrated in the photographs of Figures 15 and 16. The effect of the electron velocity on the magnitude of the dispersion was measured by means of calibrated standards; photographs of these standards taken at U_K = 20 kV and U_K = 40 kV are shown in Figures 17; from these it is concluded that the

SOV/109-4-1-14/30

An Electrostatic Lens as a High-resolving-power Analyser of Electron Velocities

dispersion becomes reduced as the electron velocity is increased; in general, the reduction in the dispersion is inversely proportional to U_K. The authors thank Yu.M. Kushnir, G.V. Der-Shvarts and D.V. Fetisov for their valuable remarks and their constant interest in this work. There are 17 figures, 1 table and 10 references, 7 of which are German, 1 French and 2 Soviet.

SUBMITTED: April 9, 1957

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SOV/109-59-4-2-21/27

AUTHORS: Kabanov, A.N. and Milyutin, V.I.

TITLE: Some Applications of the Electrostatic Analyser of Electron Velocities (Nekotoryye primeneniya elektrostaticheskogo analizatora skorostey elektronov)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 2, pp 321-329 (USSR) F

ABSTRACT: The analyser used in the measurements was described by the authors in an earlier paper (Ref 18). The authors employed the equipment to investigate the energy losses of the electrons scattered by thin films. The spectra were taken in the following manner. For a given accelerating potential, the position of the slot of the analyser was adjusted so as to obtain the "clearest" possible image. The investigated object was then introduced and the image of the slot was photographed on a finite screen. The image was usually in the form of an intense line corresponding to the elastically scattered electrons and of several lesser lines corresponding to the electrons which lost their initial energy. All the measurements were done at the accelerating potential of 30 kV. Each spectrum was

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SOV/109-59-4-2-21/27

Some Applications of the Electrostatic Analyser of Electron Velocities

photographed several times. Resolving power of the analyser was 0.6 eV. Spectra of aluminum oxide, gold, silver, antimony and aluminum and carbon films were photographed. Also the spectrum of the gases contained in the analyser at a pressure of 5 x 10^{-4}mm Hg were recorded. The spectrum of the aluminum oxide is shown in Fig 1, that of gold is given in Fig 2 and that of silver is in Fig 3. The spectrum of antimony is shown in Fig 4, carbon is represented by Fig 5 and aluminum is shown in Fig 6a. The spectra were used to evaluate the energy losses and these are given in the table on page 323, together with the corresponding values obtained by other authors (G. Möllenstedt, L.Marton, H.Watanabe and G.Rutheman). The effect of the ripple in the supply voltage on the performance of the analyser was investigated. The results are shown graphically in Fig 7, 8, 10 and 11, which illustrate the image of the slot as a function of the ripple in the accelerating potential and of the control-grid voltage. The authors

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SOV/109-59-4-2-21/27

Some Applications of the Electrostatic Analyser of Electron Velocities

express their gratitude to Yu.M.Kushnir for valuable advice and to L.I.Zemlyanov and V.S.Butkevich for supplying the films of various substances. There are 11 figures, 1 table and 18 references of which 2 are Soviet, 9 English, 2 French and 5 German.

SUBMITTED: 9th April 1957

Card 3/3

AUTHORS: Kabanov, A.N., Milyutin, V.I., Fetisov, D.V. SOV/48-23-4-6/21

TITLE: Electrostatic Analyzer of Electron Velocities up to 75 kv (Elektrostaticheskiy analizator skorostey elektronov na 75 kV)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1959, Vol 23, Nr 4, pp 459 - 461 (USSR)

ABSTRACT: The further development of electron microscopy requires a study of electron scattering in electron microscopic objects. Such an investigation is carried out with the aid of instruments that make it possible to determine the angle and electron energy distribution upon acting with the object. The instruments hitherto employed featured electrostatic lenses and an accelerating voltage of 35-40 kv. A description is given of the difficulties arising in the adequate application of accelerating voltages up to 75 kv. Figure 1 shows the analyzer principle for a 75 kv electron beam, and figure 2 the characteristic curve and geometrical dimensions of the analyzer. In principle, the deflection of an incident beam into an electric field with known strength, and the beam

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Electrostatic Analyzer of Electron Velocities SOV/48-23-4-6/21
up to 75 kv

intensity are measured with this instrument. Figure 3 shows a basic circuit diagram of the instrument. Finally, the adjustment ranges of the middle electrode potential are specified. A detailed description of the instrument will be given in a following paper. There are 3 figures.

Card 2/2

AUTHORS: Stoyanova, I. G., Kabanov, A. N. SOV/48-23-6-12/28

TITLE: Investigation of the Energy Losses of Electrons in Thin Gas Layers (Issledovaniye poter' energii elektronov v tonkikh sloyakh gazov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 6, pp 719-721 (USSR)

ABSTRACT: The dispersion occurring during the investigation of objects in gases causes a decrease in the contrast of resolution etc. For the purpose of measuring the electron energy losses in thin layers of gas, the authors constructed an experimental unit which is similar to an electronic microscope, in which the gas to be investigated is enclosed in an object chamber, and in which gas pressure may be varied from 5.10^{-3} to 760 torr. The electron beam is diaphragmed by means of a slotted diaphragm to a thin plane beam, and is recorded on a photographic plate by means of an analyzer lense. The photometrization of the electron energy spectrum is carried out by using the calibration standard. Nine pictures are shown of the results of measurements obtained (Figs 3, 4, 5) : the energy spectra of air at

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$5 \cdot 10^{-3}$, 120 and 340 torr, of He, Ar, H_2S and H_2 at 150 torr and of O_2 at 20 and 60 torr. The intensity of these spectra grows with increasing pressure. The results obtained distinctly show the dependence of energy loss on the ionization potential. There are 5 figures and 4 Soviet references.

KABANOV, A.N.

PHASE I BOOK EXPLOITATION SOV/4557

Akademiya nauk SSSR. Institut metallurgii

Metallurgiya, metallovedeniye, fiziko-khimicheskiye metody issledovaniya (Physicochemical Research Methods in Metallurgy and Metal Science) Moscow, Izd-vo AN SSSR, 1960. 151 p. (Series: Its: Trudy, vyp. 6) 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova.

General Ed.: I.P. Bardin, Academician (Deceased); Resp. Eds. for this Vol.: I.B. Borovskiy, Doctor of Physics and Mathematics, and K.P. Gurov, Candidate of Physics and Mathematics; Ed. of Publishing House: K.P. Gurov, Candidate of Physics and Mathematics; Tech. Ed.: O.M. Gus'kova.

PURPOSE: This collection of articles is intended for researchers in metallurgy and metal science and for scientists engaged in developing physicochemical methods of analysis.

Physicochemical Research Methods (Cont.) SOV/4557

COVERAGE: The collection contains 21 studies by members of the Laboratoriya fizicheskikh metodov issledovaniya (Laboratory of Physical Analysis Methods) of the Institut metallurgii imeni A.A. Baykova AN SSSR (Metallurgical Institute imeni A.A. Baykov, Academy of Sciences USSR), published in 1958-59. The articles are concerned with the experimental and theoretical study of physical characteristics of diluted solid solutions and compounds with special properties. The purpose of these studies is to establish the interrelation between the electronic structure of atoms and the structural characteristics of metallic compounds of systems. Some of the articles contain results obtained by applying new physical analysis methods, including the x-ray spectrum method (for analyzing the composition of microvolumes of alloys) and the microfocused x-ray spectroscopic method. Other articles describe the new RSASh-2 and RSASh-2D apparatus used in the analysis. The first article, by I.B. Borovskiy, deals with the accomplishments and trends of Soviet research in metal science and metallurgy. References accompany each article. Also included is a bibliography containing 383 works by members of the Metallurgical Institute imeni A.A. Baykov. This bibliography was first published in 1956.

Physicochemical Research Methods (Cont.) SOV/4557

Borovskiy, I.B., and I.A. Ovsyannikova. Study of X-Ray Spectra of the Superconducting Compound CuS 49

Borovskiy, I.B., and V.V. Shmidt. Study of the Temperature Dependence of the Fine Structure of the Main K-Edge X-Ray Absorption in Iron 54

Borovskiy, I.B., and V.A. Batyrev. Nature of the Fine Structure of the Main K-Edge of the X-Ray Absorption Spectrum of Elements of the Transition Iron Group 60

Borovskiy, I.B., A.N. Kabanov, Ya. N. Kushnir, and V.V. Shmidt. Effect of Temperature on the Amount of Characteristic Energy Losses of Electrons in Iron 66

Ditsman, S.A., and V.A. Batyrev. Effect of Absorption in the Emitter on the Form of the X-Ray Spectrum Lines 70

Borovskiy, I.B., and I.D. Marchukova. Method of Constructing the Phase Fields of State Diagrams 73

Borovskiy, I.B., N.P. Il'in, and L. Ye. Loseva. Study of Diffusion in Ordered Solid Solutions 77

Card 4/6

87394
S/120/60/000/004/003/028
E032/E414

21.5300

AUTHOR: Kabanov, A.N.

TITLE: A Universal High-Resolution 75 keV Electrostatic Electron Spectrograph

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.4, pp.23-28

TEXT: The spectrograph incorporates a single electrostatic lens with plane symmetry as the dispersing element. The lens is shown schematically in Fig.1 in which 2 is the body of the lens, 3 is the lower electrode, 4 is the base of the insulator, 5 is the insulator of the intermediate electrode, 6 is the intermediate electrode holder, 7 is the intermediate electrode, 8 is the upper electrode, 9 is an insulator, 10 is a screened lead and 11 is a slit. The last mentioned can be adjusted without admitting air into the apparatus. The form of the electrodes and insulators of this lens was chosen so that the electric field in the inter-electrode spaces, and on the surfaces of the insulators, was practically uniform. The electrodes were made from stainless steel and the insulators from "organic glass" (perspex). The working voltage of the lens is 75 to 80 kV. The analyser incorporating the above dispersing element produces a

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87364
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E032/E414

A Universal High-Resolution 75 keV Electrostatic Electron Spectrograph

dispersion of about 0.15 mm/V. The resolving power of the instrument is 150000 : 1 at 75 kV. The electron-optical setup of the analyser consists of 4 single electrostatic lenses. It can be used to measure the angular or energy distribution of electrons and to obtain electron diffraction and electron-microscopic photographs. One of the above lenses serves as a condenser and regulates the angular apertures of the electron beam in the plane of the object, while the other three lenses constitute the objective and the intermediate analysing lenses respectively. All the lenses except for the analysing lens (see Fig.1) are axially symmetric. The possible methods of using the instrument are indicated in Fig.4 in which 1 is the source of electrons, 2 is the condenser, 3 is the illuminating diaphragm, 4 is the object, 5 is the objective, 6 is the intermediate diaphragm, 7 is the intermediate lens, 8 is the intermediate photographic camera, 9 is the entrance slit, 10 is the analysing lens and 11 is the screen and the final photographic

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E032/E414

A Universal High-Resolution 75 keV Electrostatic Electron Spectrograph

camera. In the first method of connection shown in Fig.4, the objective produces a magnification of 40 - 50, the object is photographed in the intermediate camera and the energy spectrum produced by the analysing lens is photographed in the final camera. By using the analyser without the objective, it is possible to estimate more accurately the intensity of the loss lines on the electron energy spectrum, since in this case the optics of the objective have no effect on the focusing of electrons with different energies. In this scheme the shadow image of the object, or its electron diffraction pattern, is photographed in the intermediate camera. If the intermediate lens is included (second diagram in Fig.4) then by adjusting the focal length of this lens and the objective (by changing the potentials on their intermediate electrodes) one can obtain the electron image in the intermediate camera with an electron-optical magnification of 1000. Alternatively, using the arrangement shown in the third diagram of Fig.4, one can obtain the electron diffraction pattern of the

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A Universal High-Resolution 75 keV Electrostatic Electron Spectrograph

object. In the latter case it is also possible to measure the angular distribution of the electrons. To achieve this, the focal length of the two lenses and the diameter of the intermediate diaphragm are chosen so that an electron diffraction pattern of small dimensions is produced in the plane of the slit. The slit then defines a narrow band on the diffraction pattern, including the central beam and parts of the diffraction rings. By replacing the intermediate electrode of the analysing lens by an electrode with a circular aperture, the instrument can be used as a high-voltage electrostatic microscope (see last diagram in Fig.4). The object can also be investigated "by reflection", by the inclusion of the appropriate attachments. The lenses are then arranged analogously to the schemes shown in Fig.4. Acknowledgments are expressed to Yu.M.Kushnir and V.I.Milyutin for assistance and interest; to D.V.Fetisov for advice on the electron optics; to V.V.Polivanov, K.K.Rasiletin, A.V.Iz"yurov and V.V.Il'in for assistance in the development of the power unit

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E032/E414

A Universal High-Resolution 75 keV Electrostatic Electron Spectrograph

and to K.S.Kursenko for taking part in building the instrument. There are 6 figures, 1 table and 11 references: 6 Soviet and 5 non-Soviet.

SUBMITTED: June 5, 1959

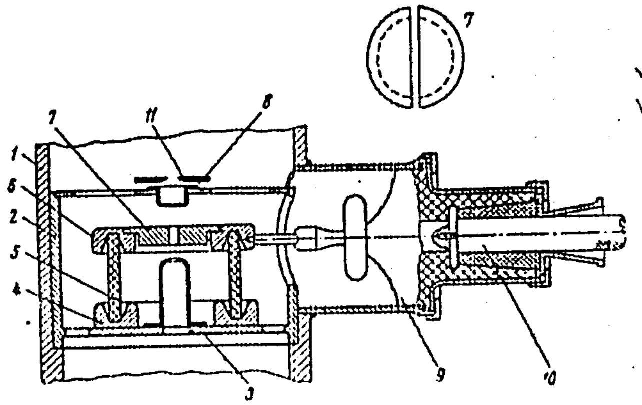

Fig.1.

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A Universal High-Resolution 75 keV Electrostatic Electron Spectrograph

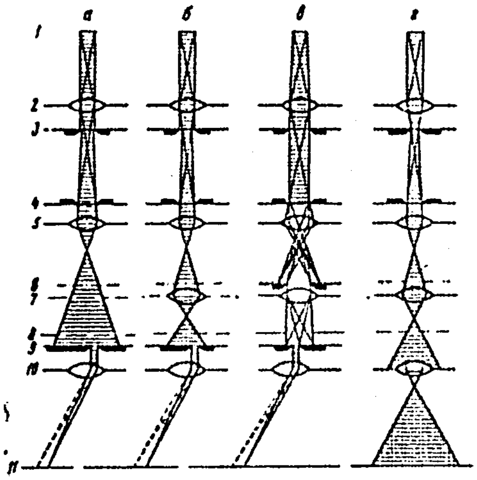

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Fig.4.

69903
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E140/E435

24.6200

AUTHORS: Kushnir, Yu.M., Kabanov, A.N. and Krutyakova, L.N.

TITLE: Measurement of Energy Loss in Gases of 70 keV Lithium Ions by an Electrostatic Analyser

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 4, pp 672-675 (USSR)

ABSTRACT: The 75 keV electrostatic electron velocity analyser, previously described in Ref 1, is adapted by a reversal of the high-voltage rectifier and substitution of a lithium ion source for the electron source. Inelastic scattering of the lithium ions in interaction with helium, argon, oxygen, nitrogen and air is studied. The spectra obtained agree well with the quantum-theoretical interaction energies and indicate the possibility of using the electrostatic analyser to study the fine effects of inelastic interaction not only of electrons but of any charged particles. Introduction of electrometric methods for recording the spectra will permit estimating not only the energy losses but the effective sections of the processes of inelastics gathering of charged particles. There are 2 figures (plate)

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4

69903

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E140/E435

Measurement of Energy Loss in Gases of 70 keV Lithium Ions by an Electrostatic Analyser

2 tables and 5 references, 3 of which are Soviet and 2 German.

SUBMITTED: June 6, 1959

Card 2/2

4

BOROVSKIY, I.B., KABANOV, A.N., KUSHNIR, Yu.M., SHMIDT, V.V.

Effect of temperature on the amount of characteristic electron energy losses in iron. Trudy Inst. met. no.6:66-69 '60.
(MIRA 13:8)

(Iron--Metallography)
(Plasma (Ionized gases))

80935

S/109/60/005/06/013/021
E140/E163

24.6200

AUTHORS: Kabanov, A.N., Kushnir, Yu.M., and Krutyakova, L.N.

TITLE: Measurement of 70 keV-Electron Energy Losses in Gases by an Electrostatic Analyser

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 6, pp 981-985 (USSR)

ABSTRACT: The interaction of a 70 keV electron beam with atomic and molecular gases was carried out using an electrostatic electron-velocity analyser (Refs 1-4) with resolution of the order of 150000 : 1. The electron beam current did not usually exceed 5 μA while the gas pressure was in the range 1 x 10-3 to 1 x 10-2 mm Hg. The electron energy loss was measured by the method described in*Ref 6. Experiments were carried out with helium, neon and argon, oxygen, nitrogen and nitric oxide, and carbon tetrachloride (at 45 kV). For the monoatomic gases certain loss lines detected in experiments with slow electrons are absent from the fast electron spectra while for molecular gases all values of loss energy detected in experiments with slow electrons occur as well for the 70 keV electrons. The energy

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E140/E163

Measurement of 70 keV-Electron Energy Losses in Gases by an Electrostatic Analyser

losses agree closely with the quantum-mechanical theoretical values.
There are 1 figure, 4 tables and 11 references, of which 4 are German, 6 Soviet and 1 English.

Card
2/2

SUBMITTED: June 6, 1959

*Radiotekhnika i elektronika, 1960, Vol.5, Nr4, pp 672-675 (USSR)

21595

S/109/60/005/010/018/031
E033/E415

26.2312

AUTHORS: Kabanov, A.N. and Kushnir, Yu.M.

TITLE: Some Applications of a Universal Electrostatic Electron-Velocity Analyser at 75 kV

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10, pp.1703-1708

TEXT: This paper was presented at the 9th All-Union Conference on Cathode Electronics, Moscow, 1959.

The article gives the results of measuring the characteristic energy losses of 75 kV electrons in thin films of various materials, and also of energy losses of electrons backscattered (reflected) from thick samples. The principles and special construction of the universal electrostatic electron-velocity analyser used in the investigation have been previously described, but the basic features are reviewed in this article. The analyser has a special chamber for investigation of electron energy loss in gases. A four-lens electron-optical system together with an intermediate photo-camera enables electron-microscopic and electronographic investigation simultaneously with measurement of the characteristic energy loss. A high-voltage rectifier and a corresponding ion-source permits the

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Some Applications of a Universal ... E033/E415

apparatus to be used as an ion-energy analyser. A power pump and liquid nitrogen cooling enable low pressures of (3 to 5) x 10^{-6} mm Hg to be maintained in the column of the analyser. For electrons and ions with 75 kev energies, the dispersion is of the order of 0.2 mm/ev and the resolving power is 150000 : 1 (0.5 ev). The measured values of the characteristic energy losses in thin films of different materials are tabulated in Table 1. For comparison, the practical results obtained by G.Mollenstedt (Mo), L.Marton and L.Leder (M and L) and Watanabe (W) at 25 to 35 kv are given in the same table. Losses calculated by A.Ya.Vyatskin's formula (Ref.11) ($\varepsilon = (150/a^2)\eta$ for a cubic lattice, where a is the lattice constant, η the reverse lattice vector) and by D.Pines' formula (Ref.12) ($\hbar\omega = \hbar(4\pi ne^2/m)^{1/2}$ where $\hbar$ is Planck's constant, m, e, n are the mass, charge and density of the valence electrons respectively) are also given in the same table. The characteristic energy losses of 75 kev electrons reflected from various materials (aluminium, zinc, tantalum, nickel, molybdenum, niobium) are given in Table 2. The pressure was 5 x 10^{-6} mm Hg and the target (3 - 4 mm wide and 0.08 - 0.10 mm thick) was heated by a d.c. current to more than 1000°C. The temperature was controllable and was

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measured by an optical pyrometer. For comparison, results (Ref.13) obtained by W.Klein (K) at 35 kev, (1 to 5) x 10^{-4} mm Hg and 150 to 200°C are given in the same table. The energy loss dependence on temperature was investigated for nickel and iron over the temperature range 0 to 1000°C. The energy loss of electrons in nickel did not depend on temperature, but in iron the energy losses change by a "jump" at the temperature corresponding to the $\alpha - \gamma$ transition (above 910°C). These results accord with the results published by I.B.Borovskiy and V.V.Shmidt of the Institut metallurgii im A.A.Baykova AN SSSR (Institute of Metallurgy imeni A.A.Baykov, AS USSR). There are 3 figures, 3 tables and 16 references: 8 Soviet and 8 non-Soviet.

SUBMITTED: December 21, 1959

Card 3/5

83572
S/056/60/038/005/005/050
B006/B070

24.7700

AUTHORS: Borovskiy, I. B., Kabanov, A. N., Kushnir, Yu. M., Shmidt, V. V.

TITLE: The Effect of Temperature on the Characteristic Energy Losses of Electrons in Iron

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1383-1387

TEXT: Borovskiy and Shmidt (Ref. 1) studied the fine structure of the main K-absorption edge of X-rays in iron and found that when the absorber is heated beyond the α → γ transition temperature (910°C) this structure is much altered. A relation between the fine structure and the characteristic energy losses of the electrons at room temperature was also discovered by them. There are many publications dealing with the nature of the characteristic energy losses of electrons when passing through thin films of matter. Some of the models - the inelastic collisions with valence electrons, and the interaction between the charged particles and the totality of the valence electrons - are discussed in the introduction of the present paper. This interaction leads to the excitation of collective oscillations of the

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83572

The Effect of Temperature on the Characteristic Energy Losses of Electrons in Iron

S/056/60/038/005/005/050
B006/B070

electron gas (plasma oscillations). The investigations described in the present paper show that a compromise between the following two points of view may prove correct, namely, that the energy losses are due to the excitation of plasma oscillations, or that they are due to single-electron transitions between energy bands. The experimental method is described in detail. An electrostatic analyzer of the electron velocities was used, which had a resolution of 0.5 ev at an accelerating voltage of 75 kev. The samples were 0.08 - 0.10 mm thick, and the electron beam had an energy of 70 - 75 kev. The experiments were performed in vacuum ($5\cdot10^{-6}$ torr). The characteristic energy losses of the electrons were measured for the following temperatures of the samples: 20^{0}, 800^{0}, and 930^{0}C. Two measurements for checking were made at 600^{0}C. The curves taken at 20^{0} and 930^{0}C (Fig.) show the energy losses (blackening of the photographic plate) as a function of the energy. The form of the curves is found to be independent of the temperature. The first characteristic loss in α-Fe (cubic, body-centered, a = 2.86 A) at 20^{0}C is (7.5 ± 0.7)ev; the following two lines at 14.8 and 21.5 ev may be considered to be multiples of the first. In γ-Fe (cubic, face-centered, a = 3.60 A at 940^{0}C) there are essential deviations. Here, the first characteristic loss is (11.6 ± 0.6)ev; the following lines at

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The Effect of Temperature on the Characteristic Energy Losses of Electrons in Iron

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B006/B070

23 and 33 ev may again be taken to be its multiples. A discussion of the results from the points of view of single-electron transitions and the excitation of plasma oscillations shows that further studies are necessary for a final clarification of this effect. The numerical data of measurement are listed in two tables. There are 1 figure, 2 tables, and 15 references: 4 Soviet, 7 US, 1 German, 1 Japanese.

ASSOCIATION: Institut metallurgii Akademii nauk SSSR
(Institute of Metallurgy of the Academy of Sciences USSR)

SUBMITTED: November 4, 1959

Card 3/3

SPIVAK, G.V.; PRYAMKOVA, I.A.; FETISOV, D.V.; KABANOV, A.N.; LAZAREVA, L.V.;
SHILINA, A.I.

Mirror-type electron microscope for studying surface structures.
Izv.AN SSSR.Ser.fiz. 25 no.6:683-690 Je '61. (MIRA 14:6)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.

(Electron microscope)

KUSHNIR, Yu.M.; FETISOV, D.V.; RASPLETIN, K.K.; POCHTAREV, B.I.; SPEKTOR, F.U.;
KABANOV, A.N.; ANISIMOV, V.F.

Scanning electron microscope, an X-ray microanalyzer. Izv.AN SSSR.
Ser.fiz. 25 no.6:695-700 Je '61. (MIRA 14:6)
(X-ray microscope)

S/048/61/025/006/008/010
B117/B212

AUTHORS: Kabanov, A.N. Kushnir, Yu.M., and Fetisov, D.V.

TITLE: Objective recording method of energy spectra of electrons for an electrostatic analyzer

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 6, 1961, 748-751

TEXT: The present paper has been presented at the 3rd All-Union Conference on Electron Microscopy, held in Leningrad from October 24 to 29, 1960. The authors have applied the method suggested by Möllenstedt (Ref.2: Möllenstedt G., Dietrich W., Optik, 12, 246 (1955)) for a 75-kv analyzer. For photographic recording of spectra the dispersing element of the analyzer consists of a slit and an analytical lens (Fig. 1 а). The principle of a device, where optical properties of the analytical lens and also the resolution and the intensity of the slit image remain constant, consists in introducing a second slit (Fig. 1б and в). It is located somewhat below the analytical lens, and is so far away from the optical axis that only those electrons will pass it, whose energies correspond to

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the optimum conditions (R_{opt}). Changing the potential of the central electrode of the analytical lens will keep the quantity R_{opt} constant. The image of the slit can only change its intensity. At the screen it remains unchanged. By adjusting optimum conditions for elastically scattered electrons and by continuous change of the central electrode potential, the number of electrons passing through the second slit is changed and it is possible to obtain easily information on the energy losses of the electrons and on the intensity of the spectral lines. The device can be simplified when using a semi-transparent fluorescent screen, a photo-electron multiplier and an automatic electronic potentiometer of the type ЭПП-0.9 (EPP-0.9). Fig. 2 shows a diagram of the dispersing element of the analyzer, the electron gun, and also the device for objective recording of electron energy spectra. Both slits are adjustable. The lower slit may be opened to a width that is sufficient to let the whole spectrum through. Control pictures of the spectrum may be taken with the camera without disturbing the vacuum. A movable photographic plate holder makes it possible to use both recording methods. After the electron beam has passed through the second slit, it hits the semi-transparent fluorescent screen with a short afterglow. The color of the afterglow and the spectral maximum correspond

Objective recording methods ...

S/048/61/025/006/008/010
B117/B212

to the sensitivity of the photocathode of the ФЭУ (FEU) multiplier of type 1С (1S). Organic glass was used as light conductor. The signal of the FEU multiplier is amplified by a d-c amplifier У (U) and is fed to the input of the balancing cathode follower КП (KP). This is used to coordinate the amplifier resistor and that of the potentiometer EPP-0.9. The change of the central electrode potential of the analytical lens was done with a ПЛ (PL) potentiometer. The total resistance of the potentiometer was 20 kilohms and its linearity 0.1%. The potentiometer was fed from a battery $Б_2$ (B_2) of type БАС (BAS) having a voltage of 150 v. The high-voltage divider R_2 made it possible to obtain the wanted conditions for the analytical lens, according to the current used for the electron beam. The battery (B_1), which was connected to the electron gun circuit, was used for recording standards for the energy spectra. A change of the resistance R_1 made it possible to adjust the current of the electron beam as necessary. The resolution of the analyzer was ~140,000 : 1 and the dispersion 0.2 mm ev^{-1}. Another article will report on the application of the analyzer with a device for objective estimation of the lines of energy spectra. There are 3 figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc.

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S/048/61/025/006/009/0[illegible]0
B1[illegible]7/B2[illegible]2

AUTHOR: Ku[illegible], Yu. M. and Katanov, A. N.

TITLE: Application of an electron analyzer for investigating the energetic composition of electrons reflected from metal

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, [illegible], no. 6, 1961, 752 - 75[illegible]

TEXT: The present paper has been presented at the 3rd All-Union [illegible] [illegible] on Electron Microscopy, held in Leningrad from October 24 to [illegible], 1960. The authors have employed an objective recording method (Ref. 1: Katanov A. N., Kushnir Yu. M., Petrov O. [illegible], Izv. v. 25, no. 6, 1961, 710) to study electron energy spectra. The measurements were done at a pressure of [illegible]$10^{-[illegible]}$ mm Hg in the column of the analyzer. The gliding and observation angles were constantly 4[illegible] in all tests. The objects were [illegible] 4 mm wide and 0.08 - 0.10 [illegible] thick foils. The

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B1[illegible]/B2[illegible]

[illegible] current of [illegible] The heater made it [illegible] and a [illegible] The characteris- [illegible] temperatures of the specimen [illegible] were used for temperature [illegible] and [illegible] shown in the [illegible] obtained by a [illegible] method [illegible] Yu. M. [illegible] Elektronika. [illegible] temperature consider- [illegible] cooling method. [illegible] has a hexagonal crystal lattice [illegible] cubic body-centered lattice (β-titanium). The electron energy spectra were recorded on a tape for temperatures of 20, 500, and 1050°C. For all these cases only two peaks were found, which corresponded to inelastically scattered electrons. During the transition from α-titanium to β-titanium the peaks are shifted by [illegible] ev toward smaller values of energy losses. It is a characteristic

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B117/B212

Application of an electron...

feature that the reflected beam consists of more than 50% of inelastically scattered electrons. A comparison of experimentally found electron energy losses (ev) as determined by the authors and H. Watanabe (Ref. 5: J. Phys. Soc. Japan., 10, 321 (1955))in α-titanium with those determined by A. Ya. Vyatskiy (Ref. 6: Zh. tekhn. fiz., 28, 2217 (1958))with the help of the annihilation radiation theory shows that experimental and theoretical results are in satisfactory agreement:

results of the author	Ref. 5	Ref. 6
24.0	24.0	23.2
48.0	50.0	50.0

For β-titanium, the calculated value for the energy loss has to be 27.2 ev. This does not agree with experimental data. A similar contradiction was observed with electron reflection by iron. This shows the difficulties involved in theoretical interpretations of the nature of characteristic energy losses. Efforts in this direction are continued.
There are 1 figure, 1 table, and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

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FETISOV, D.V.; KABANOV, A.N.

High-voltage-armored lead-in. Izv.AN SSSR.Ser.fiz. 25 no.6:766-767 Je '61. (MIRA 14:6)

(Electric power distribution--High tension)

FETISOV, D.V.; POCHTAREV, B.I.; KABANOV, A.N.

Vacuum switch with a single regulating handle. Izv.AN SSSR.Ser.fiz. 25 no.6:776-779 Je '61. (MIRA 14:6)
(Vacuum apparatus)

KUSHNIR, Yu.M.; KABANOV, A.N.; KRUTYAKOVA, L.N.; TARASOVA, L.V.

Elastic and inelastic scattering of reflected electrons. Izv. AN SSSR. Ser. fiz. 27 no.9:1235-1238 S '63. (MIRA 16:9)
(Electrons--Scattering)

KABANOV, A.N.; MIKHAYLOVSKIY, G.A.; SVIRIDOV, A.M.

Features of using electron guns of electron microscopes at high currents. Radiotekh. i elektron. 9 no.8:1470-1475 Ag '64. (MIRA 17:10)

L 10241-66 EWT(d)/FBD/EWT(1)/EEC(k)-2/EPF(n)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c)

ACC NR: AP5028275 WG/WW/AT SOURCE CODE: UR/0020/65/165/002/0303/0304

55 44 55 44 55 44 55 44

AUTHOR: Kurbatov, L. N.; Kabanov, A. N.; Sigriyanskiy, V. V.; Ilashchenko, V. Ye.; Mochalkin, N. N.; Sharin, A. I.; Soroko-Novitskiy, N. V.

55 44 55 44 55 44

44

91

ORG: none

TITLE: Generation of coherent radiation in GaAs samples excited by electrons

SOURCE: AN SSSR. Doklady, v. 165, no. 2, 1965, 303-304

55,44 21,44,55

TOPIC TAGS: laser, semiconductor laser, electron beam, gallium arsenide, crystal lattice, electron

ABSTRACT: Laser action at 77K and at room temperature is reported in both n- and p-type GaAs excited with a beam of electrons. The Fabry-Perot cavity was prepared by cleaving in the (110) plane. The resonator mirror surfaces were separated by a distance of 50—60 μ. An electron beam device supplied electrons with energies up to 60 kev. The repetition rate and the pulse duration were 50—200 pulses per second and 9×10^{-8} sec, respectively. The maximum beam current at a beam diameter of 60—70 μ was 17 mamp. The electron beam was normal to the polished surface of the sample. The light was emitted from the faces normal to the polished faces. The threshold current densities were different for different samples and varied between 70 and 150 amp/cm^2. Since the effective mass of the electron and the width of the forbidden gap in GaAs are larger than in InSb and InAs (two of the other semiconductor lasers) and the lifetime of the electrons is very short, population inversion in

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ACC NR: AP5028275

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GaAs should occur at a temperature of the electron gas equal to the Debye temperature (θ_D = 410K) and not the lattice temperature. Therefore, in the range of lattice temperatures between 77—300K the threshold current should depend weakly on the temperature. The weak temperature dependence of the threshold current for laser action in GaAs was confirmed experimentally. Orig. art. has: 2 figures. [CS]

SUB CODE: 20 / SUBM DATE: 14Jan65/ ORIG REF: 003/ OTH REF: 004/ ATD PRESS: 4161

Card 2/2

L 36554-66 EWT(1)

ACC NR: AP6015760 (A,N) SOURCE CODE: UR/0048/66/030/005/0764/0765

AUTHOR: Kabanov, A. N.; Fetisov, D. V.; Tokarev, P. D.; Glushkova, E. D.; Kushnir, Yu. M.

ORG: none

TITLE: The MESEM-A-40 electrostatic electron microscope energy analyzer /Report, Fifth All-Union Conference on Electron Microscopy held in Sumy 6-8 July 1965/

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 5, 1966, 764-765

TOPIC TAGS: electron microscope, electron diffraction, electron scattering, inelastic scattering, electron energy

ABSTRACT: A type MESEM-40 electrostatic electron microscope, described elsewhere by V.I.Milyutin, D.V.Fetisov, K.K.Raspletin, F.U.Spektor, and B.I.Pochtarev (Izv. AN SSSR. Ser. fiz., 23, 454 (1959)), has been modified for use as an electrostatic energy analyzer for investigation of inelastic scattering of electrons. The modified instrument can also be used as an electron diffraction camera. Two auxiliary sections were fabricated to replace the section of the MESEM-40 microscope that contains the objective, intermediate, and projection lenses. One auxiliary section is inclined and contains the condensing lens for work with electron reflection. The other auxiliary section contains the specimen holder, the mechanism for controlling the motion of the

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Card 2/2 mLP

1. KABANOV, A. P.

2. USSR (600)

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7. Report on the detailed prospecting for brick loam, tripoli, marl, and chalk in the vicinity of the Bryansk brick factory. (Abstract.) Izv. Glav. upr. geol. fon. no. 2, 1947.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

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249 p. (MIRA 11:2)
(Kabardia--Biography)

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